

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING  
ENGINEERS, INC.  
1791 Tullie Circle, NE / Atlanta, GA 30329  
404-636-8400  
TC/TG/TRG MINUTES COVER SHEET**

(Minutes of all TC/TG/TRG Meetings are to be distributed to all persons listed below within 60 days following the meeting.)

TC/TG/TRG NO.: **TC 1.12** \_\_\_\_\_

TC/TG/TRG TITLE: **Moisture Management in Buildings** \_\_\_\_\_

DATE OF MEETING: **1pm to 3pm, June 26, 2010** LOCATION: **Albuquerque Convention Center, Messila Room (UL-East), Albuquerque NM**

Approved in Las Vegas NV, January 29 2011

<b>MEMBERS PRESENT</b>	<b>TERM EXPIRES 6-30</b>	<b>MEMBERS ABSENT</b>	<b>TERM EXPIRES 6-30</b>	<b>EX-OFFICIO MEMBERS</b>
Raymond Patenaude	2011	John Murphy	2011	Victor Penar
Lew Harriman III	2012			
Steve Cornick	2013			
Holly Bailey	2011			
Larry Elkin	2013			
Hugo Hens	2013			
Andreas Holm	2012			
Achilles Karagiozis	2013			
Louis Kelter	2012			
Neil Leslie	2010			
Paul Shipp				
Anton TenWolde				
Jeff Traylor	2012			
<b>CORRESPONDING MEMBERS PRESENT</b>		<b>CORRESPONDING MEMBERS ABSENT</b>		<b>ADDITIONAL ATTENDANCE</b>
Ron Bailey		Doug Abramson		Fiona Aldous
Marcus Bianchi		Mark Anderson		Diana Fisler
Stephen Barefoot		Gil Avery		Dale Herron
Stan Gatland		Chris Balbach		Paulo Cesar Tabares
Hartwig Kuenzel		Doug Bibee		Raoul Webb
Carl Lawson		Charles Culp		
Wahid Maref		Leonard Damiano		
Alex McGowan		Claudio Duras		
		Andre Desjarlais		
		Tom Ferdelman		
		Julie Ferguson		
		Manfred Gerber		
		Sam Glass		
		Mark Lawton		
		Mark Lentz		
		Him Ly		
		Wahid Maref		
		Michael Matthews		
		Chris McDonald		

		Albert Pucino		
		Mika Salonvaara		
		Alberto Sanchez		
		Ella Sterling		
		Dave Warfield		
		Bede Wellford		
		Theresa Weston		

## DISTRIBUTION

*All Members of TC/TG/TRG plus the following:*

TAC Section Head:	Victor Penar
TAC Chair:	Donald Brundage
All Committee Liaisons As Shown On TC/TG/TRG Rosters:	
Manager of Standards	Stephanie Reiniche
Manager of Research & Technical Services	Mike Vaughn

### TC 1.12 Moisture Management in Buildings

1 to 3pm, June 26<sup>th</sup> 2010

Albuquerque Convention Center, Messila Room (UL-East), Albuquerque NM

**1. Call to order – Ray Patenaude – Chair**

Chair calls meeting to order at 13:00.

**2. Self-Introduction of members and guests – Ray Patenaude**

Introductions – Section 1 Head arrived in the middle of the meeting but did not report to the committee

**3. Approval of minutes from Orlando meeting – Steve Cornick**

**Motion:** Steve Cornick moved to accept the draft minutes from Orlando with minor edits. Paul Shipp seconded. Motion carried (9, 0, 0, CV).

**4. Review agenda – Ray Patenaude**

Chair Patenaude suggested several changes to the agenda. Agenda approved. Revised agenda attached

**5. Chairman’s report – Ray Patenaude**

- a. *Requirement for Member ID to be placed on roster.* – In to be placed on the roster potential committee members require an ASHRAE number. Potential committee members do not need to be ASHRAE members, ASHRAE will assign them a non-member number.
- b. *Google Groups presentation.* – Cornick gave a brief description of the Committee’s Google group. He attempted, unsuccessfully, to give a live demonstration. Cornick will make a tutorial movie for distribution.
- c. *Lew Harriman’s report.* – Lew Kelter has received a distinguished service award. Chair Patenaude is to receive an exceptional service award. Rodney Lewis is ill and Harriman will convey the Committee’s best wishes and a card. Also a card from the Committee will be sent to Elia Sterling (Corresponding Member) whose wife passed away recently.
- d. *Membership.* – There are two voting membership positions available.

**Action item:** Cornick will make a tutorial movie on the use of Google groups for distribution.

**6. Research – Larry Elkin**

- a. *Status update – Pool evaporation work statement (WS-1566, developed by TC 8.10)*

The committee sent comments to TC 8.10, specifically that a heat, air, and moisture expert should be on the PES/PMS. The 8.10 response was that the Committee should recommend a person. No one volunteered, consequently no action is needed

- b. *Status update – DOAS design guide (1565-WS)* – This work statement is in the queue and waiting for funding.
- c. *Other research topics* – To address the absence of RTARs and research projects Larry Elkin will ask the membership to submit three ideas each, by email or by using our Google groups. All that is required is good, descriptive, title. This should happen in about month and a half. The ideas will be ranked for voting, the top ideas selected and authors identified.

**Action item:** Elkin will solicit research ideas from the membership, 3 each, collect and organize them and present them to the membership for evaluation by Aug 15<sup>th</sup>.

## 7. Program – Neil Leslie

- a. *Programs at the Albuquerque “Energy Efficient System Design for High Elevations and Dry Climates” (June 2010)* – TC has two programs at Albuquerque; Seminar 21 entitled “Odd Moisture Management Issues in Dry Climates,” Chaired by Neil Leslie and Seminar 48 entitled “Solving Moisture Problems Created by Energy Efficient Design,” Co-sponsored with TC 4.4. and chaired by Alex McGowan.
- b. *Proposed programs for Las Vegas “Zero energy design” (January 2011)* – The following sessions for Las Vegas were proposed:
  - i. Status Lew Harriman’s proposed Forum Moisture Management Problems in High and Dry Climates: What Are They and How Can ASHRAE Help. The forum was not accepted for Albuquerque – The consensus was to drop the topic from the program plan.
  - ii. A Forum entitled “What should be in a moisture management chapter in the ASHRAE Handbook?” Chair: Alex McGowan.
  - iii. Another Forum entitled “Should ASHRAE code-intended standards include requirements for heat, air, and moisture management?” Chair: Ray Patenaude (Seeking TC 4.4 co-sponsorship)
  - iv. A Seminar entitled “Update on ASHRAE’s Position Document on Mold” Chair: Ron Bailey
  - v. Another Seminar entitled “The Cool (and not so Cool) Tools for Investigating Moisture Problems in Buildings” Chair: Neil Leslie
- c. *Proposed programs for Montreal “Net-zero Buildings” (June 2011)* – The following sessions are proposed for Montreal:
  - i. Forum entitled “Should ASHRAE certify moisture management engineers?” Chair: Larry Elkin
  - ii. Seminar entitled “New U.S. EPA Guidance for Moisture Control in Buildings” Chair: Eric Werling
  - iii. Seminar: “Moisture Problems below Grade” Chair: Wahid Maref
  - iv. Seminar on Thermal Storage Chair: Wahid Maref
  - v. Conference Paper Session: “Solving Moisture Problems Created By Energy Efficient Design,” Chair: Alex McGowan (Seeking TC 4.4 co-sponsorship)
- d. *Chicago “The Impact of HVAC&R on Our Daily Live” (January 2012)* – The following ideas are possible for Chicago:
  - i. Idea from Chicago meeting: Seminar entitled “Impact of ASHRAE Guidance on Moisture Management in Buildings” Chair: Gil Avery

- e. *Replacement for Neil Leslie Program Chair* – Neil Leslie has stepped down as Program Chair; Alex McGowan will take over from him as of July 1<sup>st</sup>, 2010. Many thanks to Neil for doing an excellent job.

For more detailed see the Program Subcommittee report, attached.

**Motion:** Leslie moves that the program plan outlined in the Program Subcommittee report be accepted as the Committee's Program plan for Las Vegas; Anton TenWolde seconds. The motion carried (10, 0, 0, CV)

## 8. Website – Ray Patenaude

*Replacement for John Murphy as Webmaster* – Cornick volunteered to take over from John Murphy.

## 9. Handbook - Holly Bailey

- a. *Review of moisture related content in Handbooks* – Alex McGowan has reviewed the 4 ASHRAE Handbooks for mentions of moisture and moisture control; these are summarized in a table in the Handbook Subcommittee minute (attached). Members should review the items Alex has identified. Specific attention should be paid to Chapters 16-17-18-19-35 of the HOF and priority given to Chapter 42 in the HOA. Comments should be helpful comments i.e. this is what it should say or this is how it is misused. The Subcommittee is looking for authors for a proposed TC 1.12 Handbook chapter – see below.
- b. *Moisture Manage in Buildings Handbook Chapter* – The consensus of the Committee is that we should have a chapter on Moisture Management in the Handbook (Applications?). Hugo volunteers to be author and will draft outline.

Subcommittee minutes attached.

**Action item:** Review the references to moisture in the Handbook identified by Alex McGowan and comment. All members

**Action item:** Request a 2 hour Handbook Subcommittee meeting prior to the current 10am meeting at the next meeting (Las Vegas) i.e. Saturday from 8am to 10am. Ray Patenaude

**Action item:** Prepare a rough draft of the proposed chapter for the next (Las Vegas) for review. Hugo Hens.

**Action item:** Can more than one TC be the cognizant committee for a chapter? Steve Cornick.

## 10. Mini-Presentation – Wahid Maref

Wahid Maref gave a presentation to the Committee entitled “Field measurements of heat flux through wall systems (i.e. ICF Walls) and 3D modeling to help designing the experiment and interpreting results.” The presentation will be made available in the TC Google group after the Albuquerque meeting.

## 11. Old Business

- a. *Status of ASHRAE mold position document* – Ray Patenaude  
Rodney Lewis will not be able to report on this topic. Ray Patenaude will take over this file pending Rodney's return. Tech Council appoints a committee to review position documents once every 8 years. Ray circulated an unofficial document related to ASHRAE's mold position document. The Tech Council review subcommittee identified the follow deficiencies in the mold position document: ASHRAE's role is vague and non-specific, the literature review does not cite specific references – the review describes ongoing research but does not cite any international or ASHRAE projects, several members are concerned about the lack of specificity. The document is

unlikely to move in a more explicit direction. The Subcommittee will be seeking approval of document and also seeking to accelerate update cycle; they would like a cleanup of the references and while not requiring a TC vote they would like TC Chairs comments. Chair Patenaude has no comment nor does TC. The document will be sent back to expedite the review. Concerned individuals can go to Tech Council and ask them to represent them.

- b. *Status of EPA Moisture Control Guidelines for Buildings* – Lew Harriman reported the guidelines are complete, in fact have been completed for a while now, and only need to be published. This would take about three weeks of work at EPA but they are not able to schedule the time currently. They should be release once EPA has the time to devote to final publication.

**Action item:** Clarify the role of a cognizant committee on a position document, e.g. the mold position document, during a tech council review. Ray Patenaude

## **12. New Business**

*TC meeting mini-presentation topics for Las Vegas – Ray Patenaude*

A potential topic for Montreal from Wahid is “Thermal storage.” Any other ideas are welcome.

## **13. Adjourn – meeting adjourned at 3pm**

*Next meeting Las Vegas Nevada, Saturday January 29<sup>th</sup> 2011*

### Action Items – June 2010

WHO	ITEM	STATUS
Cornick	Make a tutorial movie on the use of Google groups for distribution.	
Elkin	Solicit research ideas from the membership, 3 each, collect and organize them and present them to the membership for evaluation by Aug 15th.	
All	Review the references to moisture in the Handbook identified by Alex McGowan and comment.	
Patenaude	Request a 2 hour Handbook Subcommittee meeting prior to the current 10am meeting at the next meeting (Las Vegas) i.e. Saturday from 8am to 10am.	
Hens	Prepare a rough draft of the proposed chapter for the next (Las Vegas) for review.	
Cornick	Can more than one TC be the cognizant committee for a chapter?	
Patenaude	Clarify the role of a cognizant committee on a position document, e.g. the mold position document, during a tech council review.	
McGowan	Submit a forum entitled “What should be in a moisture management chapter in the ASHRAE Handbook?” for Las Vegas.	
Patenaude	Submit a forum entitled “Should ASHRAE code-intended standards include requirements for heat, air, and moisture management?” (Seeking TC 4.4 co-sponsorship) for Las Vegas.	
Bailey, Ron	Submit a seminar entitled “Update on ASHRAE’s Position Document on Mold” for Las Vegas.	
Leslie	Submit a seminar entitled “The Cool (and not so Cool) Tools for Investigating Moisture Problems in Buildings” for Las Vegas.	
McGowan	Submit a conference paper session: “Solving Moisture Problems Created By Energy Efficient Design,” Chair: Alex McGowan (Seeking TC 4.4 co-sponsorship) for Montreal.	
All	Check TC website	

### Action Items – January 2010

WHO	ITEM	STATUS
Lew Harriman	Send TC comments to TC 8.10 and the 1566-WS authors.	Completed.
Steve Cornick, Ray Patenaude	Investigate and endeavor to setup a communications portal for the committee.	Completed
Steve Cornick, Ray Patenaude	Seek clarification of the role of the program subcommittee at TC Chairs breakfast and will report back.	Completed. CEC has no clarification as to the role of the program subcommittees in the current situation. Continue with status quo. Communication with the track Chairs is key.
Neil Leslie	Forward information to proposed session chairs.	Complete
Ray Patenaude	Track the ASHRAE mold position document and report back to the committee in NM.	Completed
Ray Patenaude	Propose a forum on the EPA guidelines;.	Moved to Albuquerque action item list
Rodney Lewis	Give a mini-presentation to the committee on the mould position document in Albuquerque.	Postponed indefinitely.
Alex McGowan	Circulate list of moisture related topics in the four ASHRAE Handbooks	Complete
All TC 1.12	Check website	Complete

*Minutes prepared by S. Cornick*

**TC 1.12**  
**Moisture Management in Buildings**  
**Agenda**  
**1pm -3pm, June 26, 2010**  
**Albuquerque Convention Center, Mesilla Room (UL-East), Albuquerque, New Mexico**

- 1. Call to order – Ray Patenaude – Chair**
- 2. Self-Introduction of members and guests**
- 3. Approval of minutes from Orlando meeting – Steve Cornick**
- 4. Review agenda – Ray Patenaude**
- 5. Chairman’s report – Ray Patenaude**
  - a. Requirement for Member ID to be placed on roster.
  - b. Google Groups presentation- Steve Cornick
- 6. Research – Larry Elkin**
  - a. Status update – Pool evaporation work statement (WS-1566, developed by TC 8.10)
  - b. Status update – DOAS design guide (1565-WS )
  - c. Other research topics
- 7. Program – Neil Leslie**
  - a. Programs at the Albuquerque meeting
  - b. Proposed programs for Las Vegas
  - c. Proposed programs for Montreal
  - d. Replacement for Neil Leslie
- 8. Website – Ray Patenaude**
  - a. Replacement for John Murphy – Steve Cornick has volunteered.
- 9. Handbook - Holly Bailey**
  - a. Review of Moisture Related Content in Handbooks
  - b. MMB Handbook Chapter.
- 10. Mini-Presentation – Wahid Maref**
  - a. Simulation Tool to Help Design Field Experiments –“Field measurements of heat flux and R Values through wall systems (ICF Walls)”
  - b. Seminar 48 – Wednesday 8- 9:30
- 11. Old Business**
  - a. Status of ASHRAE mold position document – Ray Patenaude
    - i. Attachment
  - b. Status of EPA Moisture Control Guidelines for Buildings – Lew Harriman
- 12. New Business**
  - a. TC meeting presentation topics for Las Vegas – Ray Patenaude

### 13. Adjourn

#### Action Items – January 2010

WHO	ITEM	STATUS
Lew Harriman	Send TC comments to TC 8.10 and the 1566-WS authors.	Completed.
Steve Cornick, Ray Patenaude	Investigate and endeavor to setup a communications portal for the committee.	Completed
Steve Cornick, Ray Patenaude	Seek clarification of the role of the program subcommittee at TC Chairs breakfast and will report back.	Completed. CEC has no clarification as to the role of the program subcommittees in the current situation. Continue with status quo. Communication with the track Chairs is key.
Neil Leslie	Forward information to proposed session chairs.	
Ray Patenaude	Track the ASHRAE mold position document and report back to the committee in NM.	Completed
Ray Patenaude	Propose a forum on the EPA guidelines;.	On-going
Rodney Lewis	Give a mini-presentation to the committee on the mould position document in Albuquerque.	Postponed.
Alex McGowan	Circulate list of moisture related topics in the four ASHRAE Handbooks	
All TC 1.12	Check website	



**TC 1.12**  
**Moisture Management in Buildings**  
**Research Subcommittee Report**  
**10:00am-11:00am, June 26, 2010**  
**Albuquerque Convention Center, Mesilla Room (UL-East), Albuquerque, New Mexico**  
**Submitted by: Larry Elkin (Chair)**

1) WS 1565 Development of the ASHRAE Design Guide for Dedicated Outdoor-Air Systems will likely be funded in the spring when FY11-12 money becomes available.

2) WS 1566 Equations to Estimate Evaporation Rates from Wetted Surfaces in Natatoriums and Commercial/Institutional Buildings has been returned by RAC with comments to the authors. RAC indicated that it is aware of those challenges with this project and they are insisting on a carefully considered work statement.

3) The Research Subcommittee is initiating an RTAR Brainstorming Session via Google Groups. Each TC 1.12 member is responsible to submitting at least 3 RTAR topic ideas for consideration. The ideas will be catalogued for ranking and voting. Please visit the TC 1.12 Google Group for more info.

RAC report

1) RTARs submitted after 7/2010 should include references the 2010-2015 ASHRAE Research Strategic Plan Goals. No references are required. But, RTARs which assist ASHRAE in achieving these goals will be given priority

2) RTAR authors should consider joint funding opportunities for research. Strong co-funding commitments for and RTAR will result in higher prioritization and consideration.

3) Research deliverables must include either an HVAC&R Research Paper or an ASHRAE Transactions Paper. ASHRAE Conference Papers do not fulfill the deliverable requirement. However, the papers must only be submitted for consideration to meet the deliverable requirement; there is no requirement that the papers be approved for symposia or publication.

4) All of the FY 10-11 research funding has been allocated. Many projects, including WS 1565, have been deferred to the spring and the FY11-12 budget year. However, there is an abundance of funding for next year. TC's are encouraged to develop new RTAR's

**TC 1.12**  
**Moisture Management in Buildings**  
**Handbook Subcommittee Report**  
**11:00am-11:30am, June 26, 2010**  
**Albuquerque Convention Center, Mesilla Room (UL-East), Albuquerque, New Mexico**  
**Submitted by: Holly Bailey (Chair)**

Subcommittee Members: Alex McGowan, Hartwig Kunzel, Lew Harriman, Andreas Holm, Lou Kelter, Larry Elkin, Holly Bailey, Steve Cornick

The last year's meetings have developed a framework of ideas to consider and begin work on. Our greatest impact right now- is largely in dealing with misinformation, lack of discussion and poorly integrated information that is in ASHRAE's handbooks and other documents.

- 1) In January Alex McGowan provided us with a copy of where in the handbooks moisture control issues occur. See below. Thank you Alex!

Next steps:

- Prioritize which of those most directly impact the topic matter of TC 1.12. (I have proposed some chapters as top priorities- committee needs to approve)
  - Get champions for each of the priority chapters
  - Determine the cognizant committees for each of those chapters and contact them to become part of their handbook subcommittee or at least a correspondence member, so we can provide input
- 2) Checklist for Engineers to use for conversations with Architects about managing moisture in buildings (this could become the basic content of a chapter in Applications)  
Develop this checklist from the **Top 10** issues with Moisture Management in buildings. (the ADHOCH mold committee had developed the top 10 things to avoid)
- 3) Other ASHRAE documents that do or should discuss Moisture Management
- Mold position paper
  - Proposed Std for Humidity Control – (Lew Harriman)
  - EPA Moisture Control Guidelines for Buildings – (Lew Harriman)
  - Airtightness addendum z 90.1 status?
  - Integrated Building Design was supposed to be part of 90.1 (Define how the interactions happen – TC 1.12)
- 4) Special Publication ideas – thoughts (avoid scaring the owner and arch in the handbook- move those items to special pubs)
- “ASHRAE for Architects” – Larry Elkin would help with Applications
    - Architect's views of the Fundamentals
    - Strip the technical info out and view it like an architect would
      - “Flashing a window” – architects want to talk about
      - Vapor pressures – architects don't want to talk about
    - Deal with the balance between using \$ for performance instead of prettiness – a NEW? concept in Architecture?
    - Performance parameters visible to the consumer...

- For every kw / btu you let in – you need to take it out times xxx – therefore building envelop choices, construction, minimizing infiltration, etc. are critical to energy conservation and sustainability

5) Resources for our committee

- Quinn Hart- 24 page brochure – top 10 essential practices – Airforce -- Lew Harriman will check on.
- Anton TenWolde– moisture in houses article for McGraw Hill –

Issues that need to be covered somewhere...

- Place to point to Natatoriums, etc.
- HVAC system interface w/ envelopes.
- Fundamentals – why is moisture in buildings important?
- Simplified concepts – big picture – generalized info - not the detail
- Fundamentals –HVAC – part load issues
- How much insulation , what kind – where to put it
- Air tightness – how to achieve?
- How long is the building to be used – tie to sustainability....
- Owner’s requirements (expectations) – first cost vs operational cost ---
- NIBBS guideline 3 – taking the \$ away from the prettiness of the building!

**Questions that need to be answered**

Can multiple committees work on the same chapter?

**Discussion points about chapter content that we need to keep in mind...**

- An Engineer is reading the chapter – why? communication tool?
- Architects who attend seminars and building council – might be reading the chapter (if in FUNDAMENTALS)
- Owner is the ultimate audience / beneficiary – but only if Arch and Eng can use the document to help owner understand
- People such as an architect – buy the ASHRAE Fundamentals – they think it IS the handbook – rarely will they get any of the other volumes
- Steve Cornick- mech engineer finds 2 basic concepts – Envelope and HVAC—Mech eng. Focuses on the HVAC – leaves the envelope to the Arch.
- Lou – Std. 180 re: maintenance.....they are still wrestling with the issues of enforcing maint. Long term.

ASHRAE Handbooks reviewed in the context of the scope and purpose of TC 1.12:

“TC 1.12 is concerned with the interaction between the weather, the building envelope, its systems and its occupants which either lead to moisture accumulation or which prevent it. The committee performs cross-cutting research, and collects and distributes information to help the public and the professions avoid problems associated with excessive moisture. These efforts are coordinated with other technical committees, industries and professions which are responsible for individual systems, building components and public health and safety.”

<b><u>Fundamentals (2009 Edition)</u></b>	
<b>Chapter 9 Thermal Comfort</b>	Resource / reference
Discussion throughout of the effect of humidity on thermal comfort	
<b>Chapter 10 Indoor Environmental Health</b>	Resource / reference
Discussion throughout of the effect of humidity on IEQ	
p 10.2 Humidifier fever, pathology associated with low RH	
pp 10.6 – 10.8 High RH, humidifiers/reservoirs support pathogen growth (Harriman et al)	
<b>Chapter 11 Air Contaminants</b>	Resource / reference
p 11.6 Controlling fungi requires control of RH and moisture content	
<b>Chapter 12 Odors</b>	Resource / reference
p 12.2 RH affects olfactory perception	
<b>Chapter 15 Fenestration</b>	Resource / reference
p 15.55 Relates RH to condensation potential on windows	
<b>Chapter 16 Infiltration and Ventilation</b>	
p 16.11 Air leakage can lead to interstitial condensation	
p 16.12 Moisture control of infiltrating outdoor air	
<b>Chapter 17 Residential Cooling and Heating Load Calculations</b>	
p 17.12 Humidification	Nothing on dehumidification?
<b>Chapter 18 Nonresidential Cooling and Heating Load Calculations</b>	
p 18.14 Mentions natatoriums	
<b>Chapter 19 Energy Estimating and Modeling Methods</b>	
pp 19.11- 19.12 Application to Cooling and Dehumidifying Coils	

pp 19.16 – 19.17 Cooling tower models	
<b>Chapter 25 Heat, Air and Moisture Control in Building Assemblies: Fundamentals</b>	TC 4.4 – we have several members participating on this chapter
p 25.2 Moisture content of materials	
pp 25.8 – 25.9 Moisture storage in building materials	
pp 25.10 – 25.12 Moisture flow mechanisms	
p 25.12 Calculation of surface humidity and condensation	
<b>Chapter 26 Heat, Air and Moisture Control in Building Assemblies: Material Properties</b>	TC 4.4 – we have several members participating on this chapter
Tables of material property data, including sorption isotherms and hygrics	
<b>Chapter 27 Heat, Air and Moisture Control in Building Assemblies: Examples</b>	TC 4.4 – we have several members participating on this chapter
Calculated examples of HAM analysis includes moisture content	
<b>Chapter 35 Sustainability</b>	
No discussion of durable envelopes and equipment, but should be!	
<b><u>HVAC Systems (2008 Edition)</u></b>	
<b>Chapter 4 Air Handling and Distribution</b>	?
pp 4.5 – 4.6 describes dehumidification	
<b>Chapter 10 Steam Systems</b>	
pp 10.6 – 10.11 discusses condensate traps and steam traps	
<b>Chapter 11 District Heating and Cooling</b>	
pp 11.7 – 11.8 describes condensate drainage in district systems	
<b>Chapter 22 Air-Cooling and Dehumidifying Coils</b>	?
Discusses dehumidification coils	
<b>Chapter 23 Desiccant Dehumidification and Pressure-Drying Equipment</b>	?
Discusses desiccant dehumidification	
<b>Chapter 24 Mechanical Dehumidifiers and Related Components</b>	?
Mechanical dehumidification	

<b>Chapter 25 Air-to-Air Energy Recovery Equipment</b>	?
pp 25.2 – 25.4 discusses ERVs and related topics	
pp 25.17 – 25.20 describes a mass recovery calculation procedure	
<b>Chapter 40 Evaporative Air-Cooling Equipment</b>	?
pp 40.7 – 50.8 discusses evaporative humidification and dehumidification	
<b><u>HVAC Applications (2007 Edition)</u></b>	
<b>Chapter 1 Residences</b>	
p 1.5 mentions residential dehumidification	
<b>Chapter 2 Retail Facilities</b>	?
p 2.4 mentions humidity control in supermarkets	
<b>Chapter 4 Places of Assembly</b>	?
p 4.4 mentions high latent loads in arenas	
p 4.5 mentions problems in ice rinks	
pp 4.6 – 4.7 discusses natatoriums (including envelope problems)	?
<b>Chapter 5 Hotels, Motels and Dormitories</b>	?
p 5.1 mentions dehumidification in the Introduction	
p 5.2 recommends Standard 62.1, discusses location of A/C units	
p 5.6 mentions moisture control and use of DOAS	
<b>Chapter 6 Educational Facilities</b>	?
pp 6.5 – 6.7 discusses humidity control in natatoriums	
<b>Chapter 7 Health Care Facilities</b>	?
p 7.1 says it is too dry in health care facilities (ref. Harriman)	
(lots of discussion in Chapter 7, especially for positive-pressure facilities)	
<b>Chapter 8 Justice Facilities</b>	?
p 8.5 discusses dehumidification requirements in fitness facilities	
<b>Chapter 12 Industrial Air Conditioning</b>	
<b>Chapter 14 Laboratories</b>	

<b>Chapter 16 Clean spaces</b>	?
Not much discussion about moisture control, but there should be...	
<b>Chapter 17 Data Processing and Electronic Office Areas</b>	?
p 17.3 High RH → anodic failure; low RH → electrostatic discharge	
p 17.4 Envelope considerations, incl. triple-glazed windows	
pp 17.6 – 17.8 humidification and dehumidification	
<b>Chapter 18 Printing Plants</b>	?
p 18.2 moisture content of paper	
<b>Chapter 21 Museums, Galleries, Archives and Libraries</b>	?
pp 21.2 – 21.5 Moisture control in museums/galleries	
<b>Chapter 22 Environmental Control for Animal and Plants</b>	?
p 22.2 Reference to Fundamentals Chapter 10 (animal moisture)	
<b>Chapter 23 Drying and Storing Selected Farm Crops</b>	?
All about moisture control in process	
<b>Chapter 24 Air Conditioning of Wood and Paper Product Facilities</b>	?
All about moisture control in process	
<b>Chapter 29 Ventilation of the Industrial Environment</b>	?
Use ventilation to reduce humidity	
<b>Chapter 31 Kitchen Ventilation</b>	?
Use ventilation to reduce humidity	
<b>Chapter 42 HVAC Commissioning</b>	?
Nothing specific about humidification and dehumidification, but should be	
<b>Chapter 43 Building Envelopes</b>	TC 4.4 – we have several members participating on this chapter
pp 43.2 – 43.4 Condensation	
pp 43.7 – 43.8 Control of moisture diffusion and condensation	
<b>Chapter 46 Design and Application of Controls</b>	?
pp 46.13 – 46.14 Humidity Controls	

<b>Chapter 51 Evaporative Cooling</b>	?
p 51.2 Humidification and dehumidification/cooling	
Should there be a chapter on moisture control in the Applications Handbook?	
<b><u>Refrigeration (2006 Edition)</u></b>	
<b>Chapter 6 Moisture Control</b>	
Discusses control of moisture as a contaminant in refrigeration systems	
(No other direct discussion of moisture control in the Refrigeration Handbook)	

..... Complied by Alex McGowan



**TC 1.12**  
**Moisture Management in Buildings**  
**Program Subcommittee Report**  
**11:30am-Noon, June 26, 2010**  
**Albuquerque Convention Center, Mesilla Room (UL-East), Albuquerque, New Mexico**  
**Submitted by: Neil P. Leslie, P.E. (Chair)**

**Orlando programs**

Seminar 28 Monday 9:45 – 10:45 in Panzacola F2 entitled “Operating Cost Implications In Humid Environments,”  
Chair: Chuck Dale-Derks (co-sponsored with TC 7.8)

Forum 6 Monday 11:00 – 12:00 in Panzacola H1/2 entitled “Solving Moisture Problems Created By Energy  
Retrofits,” Chair: Alex McGowan (co-sponsored with TC 4.4 and 9.1)

Seminar 72 Wednesday 11:00 – 12:30 in Panzacola F2 entitled “Lessons from the School of Hard Knocks: The  
Revised ASHRAE Guide for Buildings in Hot & Humid Climates,” Chair: Neil Leslie

Program activities planned for Albuquerque, Las Vegas, and Montreal are as follows:

**Albuquerque Summer 2010 (June 26-30) Theme: Energy Efficient System Design for High Elevations and  
Dry Climates**

Seminar entitled “Odd Moisture Management Issues in Dry Climates”

Chair: Neil Leslie

Bill Rose – Roof Problems

Holly Bailey – Swamp Coolers

Andreas Holmes – Low Humidity Effect on Humans

Forum entitled “Moisture Management Problems in High and Dry Climates: What Are They and How Can  
ASHRAE Help?”

Chair: Lew Harriman

Idea from Chicago Meeting not further considered: Wahid Marif Seminar Suggestion: “Moisture Problems below  
Grade”

Due date for Seminar and Forum submissions for Albuquerque is February 12, 2010. Program tracks include

Track 1 What Is Sustainable Anyway?

Track 2 Energy Facts and Simulation

Track 3 Ventilation Systems

Track 4 Refrigeration for the Future

Track 5 Central Plant Systems

Track 6 BIM/CAD/Paper and Pencils

Track 7 Energy Conservation vs. New Generation

Track 8 Living with HVAC&R Systems

Track 9 High Efficiency HVAC Systems

Track 10 Professional Skills  
Track 11 Data Center and High Density Cooling  
Track 12 Unassigned

Track 8 is a possible fit for the proposed programs.

**Las Vegas Winter 2011 (January 29–February 2) Theme: Zero Energy Design**

Seminar entitled “Update on ASHRAE’s Position Document on Mold”

Chair: Ron Bailey  
Rodney Lewis and others?

Seminar entitled “New U.S. EPA Guidance for Moisture Control in Buildings”

Chair: Eric Werling  
Terry Brennan  
Joe Lstiburek  
Lew Harriman

Seminar entitled “The Cool (and not so Cool) Tools for Investigating Moisture Problems in Buildings”

Chair: Neil Leslie  
Lew Harriman  
Holly Bailey

Idea from Chicago meeting: Seminar entitled “Impact of ASHRAE Guidance on Moisture Management in Buildings”

Chair: Gil Avery

Seminars or forums not approved for the Albuquerque meeting will be re-visited for the Las Vegas meeting.

Due date for Seminar and Forum submissions is August 6, 2010. ASHRAE has a paper option entitled Conference Paper, a shorter, single-blind review paper. Unsolicited technical papers are still an option for poster sessions. Due date for Conference Paper abstracts and Technical Papers for the poster session is April 9, 2010.

**Montreal Summer 2011 (June 25 – 29)**

Seminars or forums not approved for the Las Vegas meeting will be re-visited for the Montreal meeting.